



# SEQUENCE LISTING

<110> Advisys, Inc.

<120> Codon optimized Synthetic Plasmid

<130> 108328.00146

<160> 43

<170> PatentIn version 3.3

<210> 1

<211> 3534

<212> DNA

<213> artificial sequence

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<223> Plasmid vector having an analog GHRH sequence.

<400> 1

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<211> 2739

<212> DNA

<213> artificial sequence

<220>

<223> Optimized vector having an analog GHRH sequence.

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<210> 3

<211> 795

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the antibiotic resistance gene  
kanamycin.

<400> 3

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gacgagttct tctga	795

<210> 4

<211> 219

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog porcine GHRH sequence.

<400> 4

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ccacctcccc ctttgaccct caggatgcgg cggcacgtag atgccatctt caccaacagc	120
taccggaagg tgctggccca gctgtccgcc cgcaagctgc tccaggacat cctgaacagg	180
cagcagggag agaggaacca agagcaagga gcataatga	219

<210> 5

<211> 246

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog mouse GHRH sequence.

<400> 5

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ctgcctccca gccctccctt caggatgcag aggcacgtgg acgccatctt caccaccaac	120
tacaggaagc tgctgagcca gctgtacgcc aggaaggtga tccaggacat catgaacaag	180
cagggcgaga ggatccagga gcagagggcc aggctgagct gataagcttg cgatgagttc	240
ttctaa	246

<210> 6

<211> 234

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog rat GHRH sequence.

<400> 6

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ctgcctccca gccctccctt cagggtgcgc cggcacgccg acgccatctt caccagcagc	120
tacaggagga tcctgggcca gctgtacgct aggaagctcc tgcacgagat catgaacagg	180
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<210> 7

<211> 225

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog bovine GHRH sequence.

<400> 7

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taccgcaagg tgctcggcca gctcagcgcc cgcaagctcc tgcaggacat catgaaccgg      180
cagcagggcg agcgcaacca ggagcagggg gcctgataag cttgc                        225
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<210> 8

<211> 225

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog ovine GHRH sequence.

<400> 8

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tacaggaaga tcctggggcca gctgagcgct aggaagctcc tgcaggacat catgaacagg      180
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<210> 9

<211> 246

<212> DNA

<213> artificial sequence

<220>

<223> Sequence for an analog chicken GHRH sequence.

<400> 9  
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tacaggaagc tgctgagcca gctgtacgcc aggaaggtga tccaggacat catgaacaag 180  
cagggcgaga ggatccagga gcagagggcc aggctgagct gataagcttg cgatgagttc 240  
ttctaa 246

<210> 10  
<211> 190  
<212> DNA  
<213> artificial sequence

<220>  
<223> Nucleic acid sequence of human growth hormone poly A tail.

<400> 10  
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gtgcccacca gccttgctct aataaaatta agttgcatca ttttgtctga ctaggtgtcc 120  
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acctgtaggg 190

<210> 11  
<211> 55  
<212> DNA  
<213> artificial sequence

<220>  
<223> Nucleic acid sequence of human growth hormone 5' untranslated

region

<400> 11

caaggcccaa ctccccgaac cactcagggt cctgtggaca gtcacctag ctgcc 55

<210> 12

<211> 782

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence of a plasmid pUC-18 origin of replicaiton

<400> 12

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aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg 180

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tccaagctgg gctgtgtgca cgaaccccc gttcagcccg accgctgcgc cttatccggt 480

aactatcgtc ttgagtccaa cccggttaaga cagcacttat cgccactggc agcagccact 540

ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtgggtg 600

cctaactacg gctacactag aaggacagta tttggatatct gcgctctgct gaagccagtt 660

accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggg 720

ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 780

tt 782

<210> 13

<211> 5

<212> DNA

<213> artificial sequence

<220>

<223> This is a NEO ribosomal binding site

<400> 13

tcctc

5

<210> 14

<211> 29

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence of a prokaryotic PNEO promoter.

<400> 14

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29

<210> 15

<211> 323

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence of a eukaryotic promoter c5-12.

<400> 15  
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 gtggggagtt attttttagag cggtgaggaa ggtgggcagg cagcagggtgt tggcgctcta 120  
 aaaataactc ccgggagtta ttttttagagc ggaggaatgg tggacacca aatatggcga 180  
 cggttctca cccgtcgcca tatttgggtg tccgcctcg gccggggccg cattctggg 240  
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 gctaccgga ggagcgggag gcg 323

<210> 16  
 <211> 210  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Optimized nucleic acid sequence of a human growth hormone poly A  
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<400> 16  
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 actccagtgc ccaccagcct tgtcctaata aaattaagtt gcatcatttt gtctgactag 120  
 gtgtccttct ataatattat ggggtggagg ggggtggtat ggagcaagg gcaagttggg 180  
 aagacaacct gtagggctcg agggggggcc 210

<210> 17  
 <211> 2722  
 <212> DNA  
 <213> artificial sequence

<220>

<223> Plasmid vector having a codon optimized mouse GHRH sequence

<400> 17

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<210> 18

<211> 2725

<212> DNA

<213> artificial sequence

<220>

<223> Plasmid vector having a codon optimized rat GHRH sequence

<400> 18

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<210> 19

<211> 2716

<212> DNA

<213> artificial sequence

<220>

<223> Plasmid vector having a codon optimized bovine GHRH sequence

<400> 19

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 gttggcgctc taaaaataac tcccgggagt tattttttaga gcggaggaat ggtggacacc 180  
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gagcagggag cctgataagc ttatcggggg ggcacccctg tgacccctcc ccagtgcctc	660
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agggcgaatt ggagct	2716

<210> 20

<211> 2716

<212> DNA

<213> artificial sequence

<220>

<223> Plasmid vector having a codon optimized ovine GHRH sequence

<400> 20

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 agggcgaatt ggagct 2716

<210> 21

<211> 2725

<212> DNA

<213> artificial sequence

<220>

<223> Plasmid vector having a codon optimized chicken GHRH sequence

<400> 21

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<210> 22

<211> 264

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for a coding sequence having an antibiotic  
resistance gene kanamycin

<400> 22

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1 5 10 15

Glu Arg Leu Phe Gly Tyr Asp Trp Ala Gln Gln Thr Ile Gly Cys Ser  
20 25 30

Asp Ala Ala Val Phe Arg Leu Ser Ala Gln Gly Arg Pro Val Leu Phe  
35 40 45

Val Lys Thr Asp Leu Ser Gly Ala Leu Asn Glu Leu Gln Asp Glu Ala  
50 55 60

Ala Arg Leu Ser Trp Leu Ala Thr Thr Gly Val Pro Cys Ala Ala Val  
65 70 75 80

Leu Asp Val Val Thr Glu Ala Gly Arg Asp Trp Leu Leu Leu Gly Glu  
85 90 95

Val Pro Gly Gln Asp Leu Leu Ser Ser His Leu Ala Pro Ala Glu Lys  
100 105 110

Val Ser Ile Met Ala Asp Ala Met Arg Arg Leu His Thr Leu Asp Pro  
115 120 125

Ala Thr Cys Pro Phe Asp His Gln Ala Lys His Arg Ile Glu Arg Ala  
130 135 140

Arg Thr Arg Met Glu Ala Gly Leu Val Asp Gln Asp Asp Leu Asp Glu  
145 150 155 160

Glu His Gln Gly Leu Ala Pro Ala Glu Leu Phe Ala Arg Leu Lys Ala  
165 170 175

Arg Met Pro Asp Gly Glu Asp Leu Val Val Thr His Gly Asp Ala Cys  
180 185 190

Leu Pro Asn Ile Met Val Glu Asn Gly Arg Phe Ser Gly Phe Ile Asp  
195 200 205

Cys Gly Arg Leu Gly Val Ala Asp Arg Tyr Gln Asp Ile Ala Leu Ala  
210 215 220

Thr Arg Asp Ile Ala Glu Glu Leu Gly Gly Glu Trp Ala Asp Arg Phe  
225 230 235 240

Leu Val Leu Tyr Gly Ile Ala Ala Pro Asp Ser Gln Arg Ile Ala Phe  
245 250 255

Tyr Arg Leu Leu Asp Glu Phe Phe  
260

<210> 23

<211> 75

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an analog mouse GHRH sequence

<400> 23

Ala Met Val Leu Trp Val Leu Phe Val Ile Leu Ile Leu Thr Ser Gly  
1 5 10 15

Ser His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Met Gln Arg His  
20 25 30

Val Asp Ala Ile Phe Thr Thr Asn Tyr Arg Lys Leu Leu Ser Gln Leu  
35 40 45

Tyr Ala Arg Lys Val Ile Gln Asp Ile Met Asn Lys Gln Gly Glu Arg  
50 55 60



His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Met Gln Arg His Val  
20 25 30

Asp Ala Ile Phe Thr Thr Asn Tyr Arg Lys Leu Leu Ser Gln Leu Tyr  
35 40 45

Ala Arg Lys Val Ile Gln Asp Ile Met Asn Lys Gln Gly Glu Arg Ile  
50 55 60

Gln Glu Gln Arg Ala Arg Leu Ser Ala  
65 70

<210> 26

<211> 76

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an analog rat GHRH sequence

<400> 26

Ala Met Ala Leu Trp Val Phe Phe Val Leu Leu Thr Leu Thr Ser Gly  
1 5 10 15

Ser His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Val Arg Arg His  
20 25 30

Ala Asp Ala Ile Phe Thr Ser Ser Tyr Arg Arg Ile Leu Gly Gln Leu  
35 40 45

Tyr Ala Arg Lys Leu Leu His Glu Ile Met Asn Arg Gln Gln Gly Glu  
50 55 60

Arg Asn Gln Glu Gln Arg Ser Arg Phe Asn Ala Cys  
65 70 75

<210> 27

<211> 234

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for an original rat GHRH sequence

<400> 27

gccatggcac tctgggtggt ctttgtgctc ctcaccctca ccagtggctc ccactgctca 60

ctgccccctt cacctccctt caggggtgcgg cggcacgccg acgccatctt caccagcagc 120

tacaggagaa tcctgggcca gctgtacgcc aggaaactgc tgcacgagat catgaacagg 180

cagcagggcg agaggaacca ggagcagagg tccaggttca actgataagc ttgc 234

<210> 28

<211> 74

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an original rat GHRH sequence

<400> 28

Met Ala Leu Trp Val Phe Phe Val Leu Leu Thr Leu Thr Ser Gly Ser  
1 5 10 15

His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Val Arg Arg His Ala  
20 25 30

Asp Ala Ile Phe Thr Ser Ser Tyr Arg Arg Ile Leu Gly Gln Leu Tyr  
35 40 45

Ala Arg Lys Leu Leu His Glu Ile Met Asn Arg Gln Gln Gly Glu Arg  
50 55 60

Asn Gln Glu Gln Arg Ser Arg Phe Asn Ala  
65 70

<210> 29

<211> 73

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an analog bovine GHRH sequence

<400> 29

Ala Met Val Leu Trp Val Phe Phe Leu Val Thr Leu Thr Leu Ser Ser  
1 5 10 15

Gly Ser His Gly Ser Leu Pro Ser Gln Pro Leu Arg Ile Pro Arg Tyr  
20 25 30

Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln Leu  
35 40 45

Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Asn Arg Gln Gln Gly Glu  
50 55 60

Arg Asn Gln Glu Gln Gly Ala Ala Cys  
65 70

<210> 30

<211> 222

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for an original bovine GHRH sequence

<400> 30

ccatggtgct ctgggtgttc ttctcgtga ccctcaccct cagcagcggc tcccacggtt 60

ccctgccttc ccagcctctc aggattccac ggtacgccga cgccatcttc accaacagct 120

accggaaggt gctgggccag ctgtccgcc ggaagctgct gcaggacatc atgaacaggc 180

agcagggcga gagaaaccag gagcagggcg cctgataagc tt 222

<210> 31

<211> 71

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an original bovine GHRH sequence

<400> 31

Met Val Leu Trp Val Phe Phe Leu Val Thr Leu Thr Leu Ser Ser Gly  
 1 5 10 15

Ser His Gly Ser Leu Pro Ser Gln Pro Leu Arg Ile Pro Arg Tyr Ala  
 20 25 30

Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln Leu Ser  
 35 40 45

Ala Arg Lys Leu Leu Gln Asp Ile Met Asn Arg Gln Gln Gly Glu Arg  
 50 55 60

Asn Gln Glu Gln Gly Ala Ala  
 65 70

<210> 32

<211> 73

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an analog ovine GHRH sequence

<400> 32

Ala Met Val Leu Trp Val Phe Phe Leu Val Thr Leu Thr Leu Ser Ser  
 1 5 10 15

Gly Ser His Gly Ser Leu Pro Ser Gln Pro Leu Arg Ile Pro Arg Tyr  
 20 25 30

Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Ile Leu Gly Gln Leu  
 35 40 45

Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Asn Arg Gln Gln Gly Glu  
 50 55 60

Arg Asn Gln Glu Gln Gly Ala Ala Cys  
 65 70

<210> 33  
 <211> 222  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Nucleic acid sequence for an original ovine GHRH sequence

<400> 33  
 ccatggtgct ctgggtgttc ttctcgtga ccctcacct cagcagcggc tcccacggt 60  
 ccctgccttc ccagcctctc aggattccac ggtacgccga cgccatcttc accaacagct 120  
 accggaagat cctgggccag ctgtccgccc ggaagctgct gcaggacatc atgaacaggc 180  
 agcagggcga gagaaaccag gagcagggcg cctgataagc tt 222

<210> 34  
 <211> 71  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> Amino acid sequence for an original ovine GHRH sequence

<400> 34

Met Val Leu Trp Val Phe Phe Leu Val Thr Leu Thr Leu Ser Ser Gly  
1 5 10 15

Ser His Gly Ser Leu Pro Ser Gln Pro Leu Arg Ile Pro Arg Tyr Ala  
20 25 30

Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Ile Leu Gly Gln Leu Ser  
35 40 45

Ala Arg Lys Leu Leu Gln Asp Ile Met Asn Arg Gln Gln Gly Glu Arg  
50 55 60

Asn Gln Glu Gln Gly Ala Ala  
65 70

<210> 35

<211> 234

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for an analog chicken GHRH sequence

<400> 35

gccatggccc tgtgggtggt ctttgtgctg ctgaccctga cctcoggaag ccactgcagc 60

ctgccacca gccaccctt ccgcgtcagg cgccacgccg acggcatctt cagcaaggcc 120

taccgcaagc tcctgggcca gctgagcgca cgcaactacc tgcacagcct gatggccaag 180

cgcgtgggca gcggactggg agacgaggcc gagcccctga gctgataagc ttgc 234

<210> 36

<211> 76

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an analog chicken GHRH sequence

<400> 36

Ala Met Ala Leu Trp Val Phe Phe Val Leu Leu Thr Leu Thr Ser Gly  
1 5 10 15

Ser His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Val Arg Arg His  
20 25 30

Ala Asp Gly Ile Phe Ser Lys Ala Tyr Arg Lys Leu Leu Gly Gln Leu  
35 40 45

Ser Ala Arg Asn Tyr Leu His Ser Leu Met Ala Lys Arg Val Gly Ser  
50 55 60

Gly Leu Gly Asp Glu Ala Glu Pro Leu Ser Ala Cys  
65 70 75

<210> 37

<211> 231

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for an original chicken GHRH sequence

<400> 37

ccatggcact ctgggtgttc tttgtgctcc tcaccctcac cagtggctcc cactgctcac 60

tgccccctc acctcccttc aggggtgcggc ggcacgccga tgggatcttc agcaaagcct 120

acaggaaact cctgggccag ctgtccgcaa gaaattacct gcactccctg atggccaagc 180

gggtcggcag cggcctgggg gacgaggcgg aaccgctcag ctgataagct t 231

<210> 38

<211> 74

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for an original chicken GHRH sequence

<400> 38

Met Ala Leu Trp Val Phe Phe Val Leu Leu Thr Leu Thr Ser Gly Ser  
1 5 10 15

His Cys Ser Leu Pro Pro Ser Pro Pro Phe Arg Val Arg Arg His Ala  
20 25 30

Asp Gly Ile Phe Ser Lys Ala Tyr Arg Lys Leu Leu Gly Gln Leu Ser  
35 40 45

Ala Arg Asn Tyr Leu His Ser Leu Met Ala Lys Arg Val Gly Ser Gly  
50 55 60

Leu Gly Asp Glu Ala Glu Pro Leu Ser Ala  
65 70

<210> 39  
<211> 40  
<212> PRT  
<213> artificial sequence

<220>  
<223> Amino acid sequence for GHRH sequence wt-GHRH

<400> 39

Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln  
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg Gln Gln Gly  
20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala  
35 40

<210> 40  
<211> 40  
<212> PRT  
<213> artificial sequence

<220>  
<223> Amino acid sequence for GHRH sequence HV-GHRH

<400> 40

His Val Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Ala Gln  
1 5 10 15

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Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Leu Asn Arg Gln Gln Gly  
20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala  
35 40

<210> 41

<211> 40

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for GHRH sequence TI-GHRH

<400> 41

Tyr Ile Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Ala Gln  
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Leu Asn Arg Gln Gln Gly  
20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala  
35 40

<210> 42

<211> 40

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for GHRH sequence TV-GHRH

<400> 42

Tyr Val Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Ala Gln  
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Leu Asn Arg Gln Gln Gly  
20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala  
35 40

<210> 43

<211> 40

<212> PRT

<213> artificial sequence

<220>

<223> Amino acid sequence for GHRH sequence 15/27/28-GHRH

<400> 43

Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Ala Gln  
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Leu Asn Arg Gln Gln Gly  
20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala  
35 40